

## WHAT IS CLAIMED IS:

1. A driving circuit for driving a semiconductor device which is driven based on a signal supplied to a gate terminal and includes a main electrode for providing an 5 output and a sense electrode, said driving circuit comprising:

an overcurrent protection circuit for detecting occurrence or non-occurrence of an overcurrent condition of said semiconductor device based on a sense voltage obtained from said sense electrode, and outputting an overcurrent protection signal which instructs said semiconductor device to stop operating when an overcurrent condition is detected;

10 and

an overcurrent protection signal masking part for establishing a masking period including at least a predetermined period immediately after a turn-on and a turn-off of said semiconductor device, and invalidating said overcurrent protection signal in said masking period while validating said overcurrent protection signal in other periods than 15 said masking period to supply said overcurrent protection signal to said gate terminal of said semiconductor device.

2. The driving circuit according to claim 1, further comprising a short-circuit protection circuit for detecting occurrence or non-occurrence of a 20 short-circuit condition of said semiconductor device based on said sense voltage, and supplying a short-circuit protection signal which instructs said semiconductor device to stop operating when a short-circuit condition is detected, to said gate terminal of said semiconductor device.

25 3. The driving circuit according to claim 2, wherein

said overcurrent protection circuit detects that said semiconductor device is under an overcurrent condition when said sense voltage is higher than a first detection threshold voltage,

    said short-circuit protection circuit detects that said semiconductor device is  
5    under a short-circuit condition when said sense voltage is higher than a second detection threshold voltage, and

    said second detection threshold voltage is determined to be higher than said first detection threshold voltage.

10          4. The driving circuit according to claim 1, wherein  
    said overcurrent protection signal masking part receives a drive-related signal which is synchronized with a signal controlling said semiconductor device so as to be turned on or off, to establish said masking period in response to said drive-related signal.

15          5. The driving circuit according to claim 1,  
    wherein said semiconductor device includes an IGBT.